330525 Velomitor XA Piezo-velocity Sensor

Datasheet

Bently Nevada Machinery Condition Monitoring

141633 Rev. M



Description

The Velomitor XA (eXtended Application) Sensor is a ruggedized version of Bently Nevada's 330500 Velomitor Sensor. Its 316L stainless steel case and unique, weatherproof connector and cable assembly permit mounting without a housing. The Velomitor XA Sensor cable assembly is suitable for use in moist environments, and the Velomitor XA Sensor design meets the requirements of IP-65 and NEMA 4X dust ratings when properly installed with a mating extension cable.

If you are measuring a machine housing to determine where to install transducers, consider what kinds of data you need to obtain. Most common machine malfunctions (imbalance, misalignment, and so forth) originate at the rotor and cause a change in rotor vibration. The location you select on the housing must accurately conduct rotor vibration to the transducer.

Install the transducer carefully. If you don't, the transducer may not accurately detect vibrations and can transmit invalid data. Bently Nevada provides engineering services to accurately measure machine housings and to install transducers.

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Specifications

Parameters are specified from +20 to +30 °C (+68 to +86 °F) and 100 Hz unless otherwise indicated.

Operating the unit outside the specified limits may result in false readings or loss of machine monitoring.

Sensitivity	3.94mV/mm/s (100 mV/in/s) ±5%.
Frequency Response	4.5 to 2,000 Hz (270 to 120,000 cpm) ±3.0 dB, 6.0 to 1,000 Hz (360 to 60,000 cpm) ±0.9 dB.
Temperature Sensitivity	-14% to +7.5% typical over the operating temperature range.
Velocity Range	1270 mm/s (50 in/s) peak.
Transverse Sensitivity	Less than 5% of sensitivity.
Amplitude Linearity	±2% to 152 mm/s (6 in/s) peak.
Mounted Resonant Frequency	Greater than 12 kHz.
Broadband Noise Floor (4.5 Hz to 2 kHz)	0.004 mm/s (160 min/s) rms, nominal.
Power Requirements	DC Voltage: -22 to -30 V_{DC} Bias Current: 2.5 to 6.0 mA
Output Bias Voltage	-12 ± 3.0 V_{DC}, Over Temperature Referenced to Pin A
Dynamic Output Impedance	Less than 2400 Ω
Broadband Noise Floor	Less than 0.004 mm/s (160 µin/s)
Grounding	Case isolated
Maximum cable length	305 metres (1,000 feet) of cable, BN part number 02173007 with no degradation of signal.

Environmental Limits

Operating Temperature Range	-55 °C to +121 °C (-67°F to +250°F)
Shock Survivability	5000 g peak, maximum
Relative Humidity	To 100% non-submerged; case is hermetically-sealed.
Magnetic Field Susceptibility	<51 min/s/gauss (50 gauss, 50-60 Hz)
Operating Temperature Range	-55 °C to +121 °C (-67°F to +250°F)
Shock Survivability	5000 g peak, maximum
Relative Humidity	To 100% non-submerged; case is hermetically-sealed.
Magnetic Field Susceptibility	<51 min/s/gauss (50 gauss, 50-60 Hz)

Physical Description

Weight	156 g (5.5 oz), typical
Diameter	28 mm (1.1 in)
Height	73.1 mm (2.88 in)
Case Material	316L stainless steel
Connector	2-pin Mil-C-26482 hermetically-sealed, 316L stainless steel shell.

Mounting Torque	45 N-m (33 ft-lb) maximum
Polarity	Pin A goes positive with respect to pin B when the sensor case motion is toward the connector.
Cable Bend Radius	1.5-in minimum bend radius.

Operating the unit outside the specified limits may result in false readings or loss of machine monitoring.

Before installing and using this product, read the 330500, 330525, and 330530 Velomitor Sensors User Guide (document 100076).

	T4 @ -40°C ≤ Ta ≤ 100°C Ex nL IIC T4 AEx nA IIC T4 Class I, Div 2, Groups A, B, C, D Install per dwg 167539 T4 @ -40°C ≤ Ta ≤ 100°C

ATEX/IECEx

190501, 330400, 330425, 330500, 330525

190501	Ⓔx II 1 G Ex ia IIC T4 Ga Ⓔx II 3 D Ex na IIC T4 Gc Ex tc III T130°C Dc T4@ Ta = -55°C to 121°C
Entity Parameters	**Zone 0/1**: Ui= 30V; Ii= 200mA; Pi= 0.75W; Ci-27.2nF; Li= 0 **Zone 2**: Ui= 30V; Ii= 200mA; Pi= 1.14W
330400, 330425, 330500, 330525	Ⓔx II 1 G Ex ia IIC T4 Ga Ⓔx II 3 D Ex na IIC T4 Gc Ex tc III T130°C Dc T4@ Ta = -55°C to 121°C
Entity Parameters	**Zone 0/1**: Ui= 28V; Ii= 150mA; Pi= 0.84W; Ci-10.8nF; Li= 0 **Zone 2**: Ui= 28V; Ii= 150mA; Pi= 1.26W

Hazardous Area Conditions of Safe Use

ATEX/IECEx

Zone 0/1:

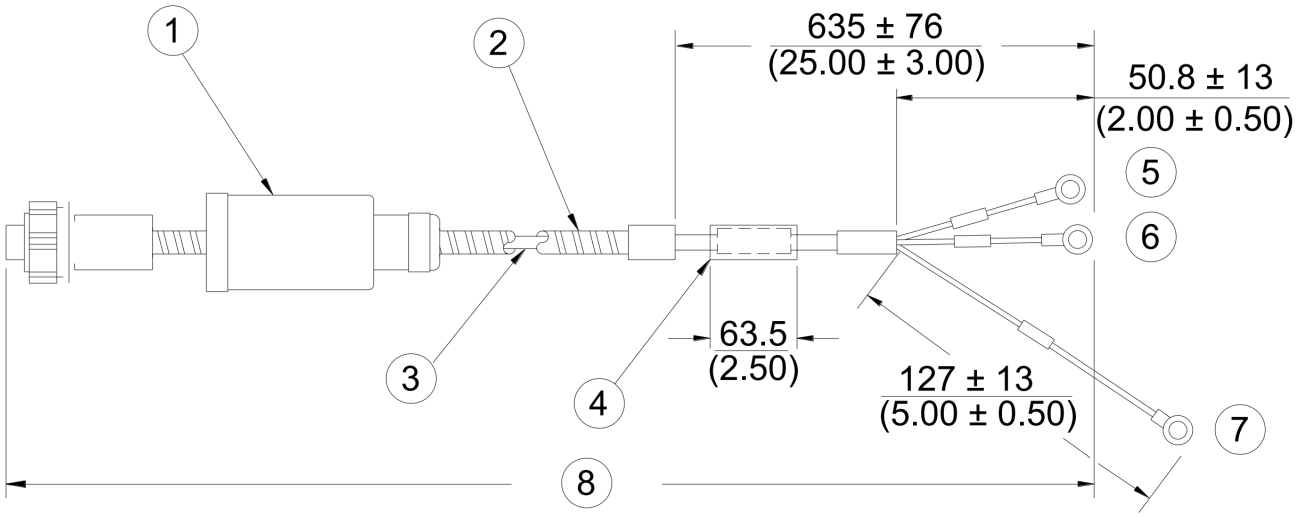
Equipment must be connected to equipment, which meets the abovelisted entity parameters.

The cables type A or B (in compliance with EN 60079-25) must respect the cable parameters listed with the entity parameters.

Zone 2 :

The supply electrical parameters shall not exceed the values mentioned in the tables above.

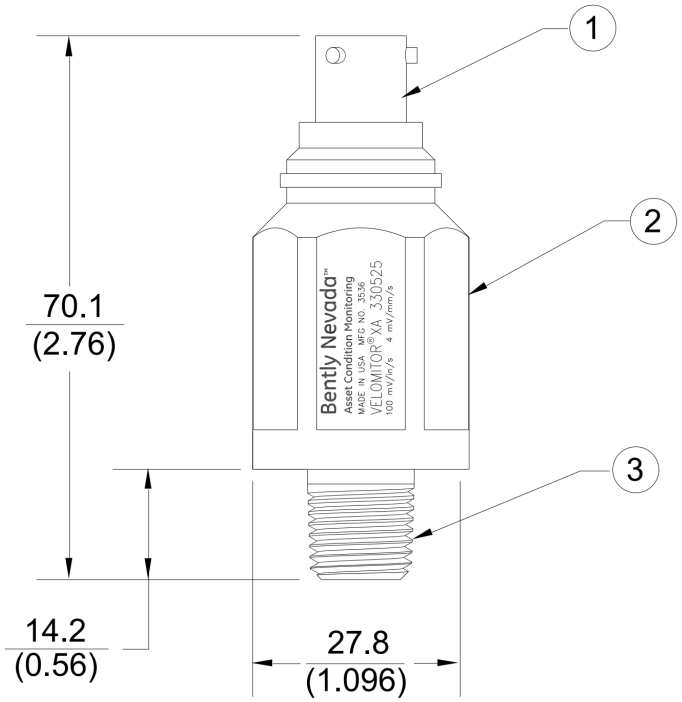
Graphs and Figures



1. Splash-resistant boot with clamps	5. “A” (white)
2. Stainless steel armor over cable	6. “B” (black)
3. 0.382 mm² (22 AWG)	7. “SHLD” (green)
4. Clear shrink tubing	8. Overall length ± 200 (7.8)

Figure 1: Dimensions for 106765 Cable

Dimensions are in millimeters (inches)



1. MIL-C-26482 receptacle
2. 25.4 (100) hexagonal
3. 1/4-18 NPT

Figure 2: Dimensions for 330525 Velomitor XA Piezo-Sensor

Dimensions are in millimeters (inches)